CHASSIS Lubricate for SAFETY every 1,000 MILES LUBRICATION

The Institute Spokesman

Published by the NATIONAL LUBRICATING GREASE INSTITUTE

VOLUME VIII • NUMBER 10 JANUARY, 1945

Report on the Activities of the Coordinating Research Council War Advisory Committee - Grease Advisory Group

By WALTER G. AINSLEY
Sinclair Refining Company

Presented at 12th Annual Meeting N.L.G.I.

The Grease Advisory Group of Coordinating Research Council was organized in April, 1942, under the direction of the Fuels and Lubricants War Advisory Committee, and all its recommendations and reports are submitted thru that Committee to the Military Services. This does not mean that the reports and recommendations are held up until a meeting of the War Advisory Committee, but all reports are submitted to that group and their approval obtained.

The membership of the Grease Advisory Group was selected by the War Advisory Committee, with consideration being given to making it a good working group, small, but including some of the leading authorities on grease problems. The Chairman was selected primarily because of his close contact with the various fuels and lubricants offices in Washington.

The first few meetings of the Group dealt solely with the grease problems of the Ordnance Department and the Quartermaster Corps, but soon requests were received from other branches of the Services until, at the present time, cooperative work is being carried out as the result of requests from the following offices:

Office Chief of Ordnance
Office Quartermaster General
Army-Navy Aeronautical Board
Bureau of Ordnance—Navy
Bureau of Aeronautics—Navy
Bureau of Ships—Navy
Rock Island Arsenal—Ordnance Dept.
Watertown Arsenal—Ordnance Dept.
Frankford Arsenal—Ordnance Dept.
U. S. Naval Engineering Experiment Station
A.A.F. Materiel Command — Wright Field
U. S. Naval Gun Factory
U. S. Naval Torpedo Station
Photographic Center—Signal Corps

Meetings have been held at Washington, Rock Island Arsenal, Chicago and New York. In the first year and one half, i.e. April, 1942 to November, 1943, ten meetings were held, not one member being absent, and since that time the absentees may be counted on the fingers of one hand. After the Group had been organized more than a year, it was decided to add to the membership a representative from the West Coast, and Mr. L. Mittleman of Tide Water Associated Oil Company was added. At this time the complete membership is as follows:

E. W. Adams, Standard Oil Co. (Indiana)
E. W. Aldrich, National Bureau of Standards
C. W. Georgi, Quaker State Oil Refining Corp.
Gus Kaufman, The Texas Company
C. L. Knopf, Sinclair Refining Co.
L. Mittleman, Tide Water Associated Oil Co.
T. G. Roehner, Socony-Vacuum Oil Co.
J. C. Zimmer, Standard Oil Development Co.

Except for the one addition, the membership of the Group has remained constant, but the number of officers and civilian representatives attending from the Military establishments has constantly increased. At the first meeting two officers were present at the opening of the meeting and one remained throughout the session, while at the last meeting fifteen military representatives were present and all stayed throughout the entire two-day session.

It was found at the start of the work that certain rules and a system of bookkeeping were necessary if the Group was to be helpful to the Services. While this system has no really hard and fast rules, it is rigid enough to keep projects moving until at least a tentative recommendation is developed.

The problems are presented to the Group in two ways—by letter, outlining the problem and requesting advice, or by verbal presentation of the problem at a Group meeting. In the latter case, the problem is usually confirmed by letter after the discussion.

At a meeting, when a new problem is discussed, a program of action is outlined. The project is given a number, and the leadership of a panel conducting test work is assigned to a member of the Advisory Group. If test samples are required, arrangements

are made for a member, or members, of the Group to supply the samples and these are assigned numbers.

The leaders of these panels are encouraged to call on laboratories outside of those represented on the Advisory Group to cover the investigation of the projects, but each leader may cover the project as he feels it should be done. During discussion of the projects, suggestions as to program, tests and test procedures are submitted by members and Military representatives, so that the project panel leader has a fair picture of the plan of attack he is to follow. At each subsequent meeting, each project is listed as an item on the agenda until such time as the Group considers the project completed. Final and Progress reports are circulated to the members of the Group and to the Project Officer as they are prepared. These reports are presented at the next meeting for discussion and transmittal to the War Advisory Committee and other Military offices as a Group action.

The meetings of the Grease Advisory Group have all been closed meetings for the following reasons:

1. They promote open discussion of problems by Company representatives.
2. They promote open discussion of military field experience and problems, with true regard for security regulations.
3. They promote quicker action, because it is not necessary to bring visitors or new members up to date on previous reports and discussions.

The minutes of the meetings are circulated only to members of the Group, because of security regulations. The C.R.C. office prepares a rough draft of the minutes following each meeting. These are submitted to the Office of Chief of Ordnance and the Army-Navy Aeronautical Board for editing and release to the Group and it would entail added complications if requests were made to distribute the minutes to others than the members who attend the meetings. The recommendations of the Group have been released to the industry thru changes in specification requirements or changes in test procedure and it is now hoped that the actions of the Committee may be released.

This may look like excessive regulation for the operation of an Industry-Military Cooperative Group, but, as Chairman, I feel the work proceeded without serious trouble or delay. The Group started without any regulation or assignment except to help the Military Services on their grease problems, and an attempt has been made to fill that assignment. The objective was to answer the military problems if at all possible, and to give clear cut recommendations and advice which represented the opinions of the Group; to consider and recommend additional test work when necessary; and to leave the Project Officer free to do as he pleased with the advice. All regulations have developed from the experience of the Group in fulfilling its assignments.

So much about the regulations and lineup, but what did the Group do?

Attached to this report as Appendix A is a complete list of the thirty-five projects which have been submitted to the Group. Those that are considered complete are so marked. The other projects are now actively being handled by the Group.

While this is a large list of projects, it does not include all the items that have been considered at the meetings. The first problem considered by the Group was the reduction of the number of greases required for ground force vehicle lubrication. No formal report was made on this project, but advice was given in the early meetings. Most of you have observed the changes in U. S. Army specifications and the decrease in the number of greases purchased by the Army.

Time will not permit giving the details of discussion, test work and conclusion on each project, but a review of the activity on several will serve to give an idea of the results accomplished.

CLG Project No. 2—"Rust Inhibiting Greases for Use in Stored Vehicles"

This problem was considered by a small group composed of four members of the Advisory Group and four additional experts from the Grease or Automotive industry. The problem was presented to the members, and after time for consideration a meeting was held and the following report prepared:

"It has been the general experience that conventional lubricating greases, which are composed of mineral oils and metallic soaps, are quite effective rust preventive coatings. In all but a few exceptional types of application, such greases have been found to be as effective as specially compounded greases containing additional anti-rust agents.

With regard to greases used on vehicles in storage, the care with which the greases are applied and the attention given the equipment during storage is of equal if not greater importance than the particular type of grease used.

In view of these factors, the opinion of the Group is that specially compounded greases containing added anti-rusting ingredients are not necessary and will not provide any appreciable advantage over conventional types of greases now in wide distribution."

CLG Project No. 6—"Lubrication Instructions—Wheel Bearings"

The project members who turned in reports on this problem were unanimous in the opinion that wheel hubs should be partially filled with grease.

After considering the information accumulated from the individual reports, the following instructions for the application of grease in wheel bearings and hubs were recommended:

(1) The grease should be thoroughly worked into the bearings so that all crevices around the balls or rollers are completely filled. This can be done by working the grease in by hand, if care and time are taken, although use of a mechanical bearing grease packer is preferred.

(2) Apply a layer of grease approximately ⅛" to ¼" thick on the hub and axle surfaces so that they are completely covered and such that a dam is formed to hold the lubricant on the bearings.

(3) Particular care must be taken that the wheel hubs are not filled completely full of grease. Over-filling of the hubs is undesirable and may cause leakage of grease through the seals onto the brake bands because of pressure from expansion when the hubs heat up during operation.

Not all the grease manufacturers nor all the equipment manufacturers agree with these recommendations, but they were agreed upon by a majority after careful consideration of the problems of over-filling, of preventing rust, of the grease acting as a dam and of the grease acting as a dirt seal.

CLG Project No. 8—"Summary and analysis of Grease Test Data Obtained by Cold Weather Test Detachment, Aberdeen Proving Ground, Winter 1942-43"

During the winter of 1942-43 the Cold Weather Test Detachment from the Aberdeen Proving Ground carried out a series of tests on equipment, fuels and lubricants. At the close of the work a complete report was prepared by the Officers' in charge of the tests, and the sections pertaining to lubricating greases were presented to the Advisory Group for review and comments.

Though the Group agreed with the conclusions and recommendations of the Test Detachment, it prepared a report giving its comments to supplement and emphasize certain points which the Group felt to be of

The INSTITUTE SPOKESMAN

Published monthly by

THE NATIONAL LUBRICATING GREASE INSTITUTE

GEORGE W. MILLER ..... *Editor*

498 Winspear Ave., Buffalo 15, N. Y.

OFFICERS

President; B. C. VOSHELL, Socony Vacuum Oil Corp.
Vice-Pres.: CARL GEORGI, Enterprise Oil Co.
Treasurer: E. V. MONCRIEFF, Swan-Finch Oil Corp.
Executive Secretary: G. W. MILLER, Battenfeld Grease & Oil Corp. of N. Y.

DIRECTORS

J. R. BATTENFELD, Battenfeld Grease & Oil Corp.
F. C. KERNS, The Texas Co.
WM. H. SAUNDERS, JR., International Lubricant Corp.
M. R. BOWER, Standard Oil Co. of Ohio
SYDNEY BEVIN, Fiske Bros. Refining Co.
C. B. KARNS, Standard Oil Co. Penna.
L. P. LOCHRIDGE, Sinclair Refining Company
H. P. HOBART, Gulf Oil Corp.
J. R. CORBETT, Cato Oil & Grease Co.
B. W. PICKARD, Standard Oil Co. of California
WM. H. OLDACRE, D. A. Stuart Oil Co.
W. C. CLARK, Pure Oil Co.
B. C. SYMON, Shell Oil Co.
H. A. MAYOR, Southwest Grease & Oil Co.
L. C. WELCH, Standard Oil Co. Indiana

PHILADELPHIA ASBESTOS • EXTON • PENNSYLVANIA
HOME OFFICE: 1600 SUMMER STREET, PHILADELPHIA, PA.

particular importance. A representative of the Group assisted with the tests at the cold weather location.

CLG Project No. 10—"Tests to determine the Tendency of Lubricating Greases to Separate Oil at Elevated Temperatures Under Static Conditions"

This project was set up at a meeting of the Advisory Group for the purpose of investigating the relationship of the Cone Oil Bleeding Test to the oil bleeding of greases in storage.

The following aspects of the Cone Bleeding Test were considered.

A. Reproducibility of the test between laboratories.

B. Correlation of Cone Bleeding Test results on various greases with oil separation observed on long-time storage tests.

C. Correlation of Cone Bleeding Test results with results of a corresponding static test using standard ball bearings instead of a screen cone.

It was concluded that the Oil Bleeding Test, as it is now set up, is not suitable for evaluating the tendency of greases to separate oil in storage, either in bulk or in equipment in which they may be used. It was recommended that other accelerated means for predicting oil separation in storage be considered, for example, the use of the centrifuge.

CLG Project No. 11—"Lubrication Recommendations for Tank Suspension Systems When Using the Alemite #6697A Grease Gun"

The Ordnance Department forwarded Tank Bogie Wheel Hubs and Grease Guns to the several cooperating laboratories and a series of tests were conducted at those laboratories under various low temperature conditions.

Following the testing, changes in the U. S. Army Specification 2-106 were recommended. Suggestions relative to the design of the dispensing equipment were also submitted.

CLG Project No. 12—"Grease Pumpability Tests in Power Driven Dispensing Equipment"

In this case, ten gasoline driven field dispensing units were set up in a cold room and tests made at low temperatures on a variety of greases meeting U. S. Army specifications. Following this exploratory program, more detailed tests were conducted using one of the units in a cold room.

Greases were dispensed from the hopper containing the mechanical worm, and gear lubricants from the other. Rates of dispensing were obtained in the temperature range from $+30°F$ to $-30°F$ so far as practicable.

The limit of utility of such equipment was established and the detailed results of the tests were made available to the Ordnance Department.

CLG Project No. 18—"Investigation of Corrosion Tests on Greases"

The copper strip type corrosion test first attained wide acceptance when it was adopted as a quick method for detecting the presence of sulfuric acid in improperly refined oils and the presence of active sulfur in various lubricants and fuels. The reason for its later adoption as a test for greases is somewhat obscure, but was probably guided by that background and by the fact that there was no other recognized quick inspection test for corrosion tendencies. In the present instance, the objective of the test normally is the detection of those greases which may cause trouble by corroding bearings. Apparently it is often assumed that if the greases do not avoid formation of stains on a copper strip, they should not be used in steel bearings because such greases would likewise corrode steel. Actually, this assumption has been contradicted by much field experience.

After consideration and cooperative testing, the Group made the following recommendations:

1. The AN-G-3a type of copper strip test should be included in those specifications where the greases will be used in bearings containing non-ferrous metals, but basis for rejection of greases should not be the formation of stains but evidence of etching or pitting when the strips are cleaned and subjected to micro-examination.

2. For those cases where insistence on rejection based on mere stains is maintained, the rejection should be tentative only until the greases are subjected to more reliable tests such as bomb oxidation or dynamic type tests.

Following this report, a "Copper Strip Corrosion Procedure for Lubricating Greases" was prepared and presented to the Services.

CLG Project No. 22—"Further Consolidation of Greases Required for Army Vehicles"

Since it is difficult to insure that the proper grease is always available for first echelon maintenance of tank and automotive equipment, the Group was asked to consider the further reduction in the number of greases used by the Army.

Just as it is difficult to use one vehicle for all types of service, so is it difficult to have one grease to fill all needs, but, after consideration, the Group made the following recommendations:

(1) That Grease, General Purpose No. 0, Specification 2-106, be used for lubrication of all chassis parts and suspension systems at temperatures below 32°F. This is in accord with current Army practice.

(2) That Grease, General Purpose No. 2, Specification 2-108, be used for the lubrication of all chassis parts and suspension systems at temperatures above 32°F.

(3) That Grease, General Purpose, No. 2, Specification 2-108, be used for wheel bearing and universal joint lubrication at all temperatures above 0° or −10°F.

(4) That steps be taken to eliminate water pumps of the older types, which require special, hard density, waterproof grease, from all Army Equipment, if any such instances are found.

The above will accomplish elimination of:

General Purpose Grease No. 1, Spec. 2-107

Wheel Bearing Grease, Heavy Duty, Spec. 2-110

Waterpump Grease, Spec. 2-109

CLG Project No. 25—"Recommendations Relative to Performance Tests on Wheel Bearing Lubricants"

It was noted that wheel bearing greases may meet the U. S. Army Specification 2-108 in its entirety yet be inferior in wheel bearing lubrication. A number of test setups and test procedures have been in use by the manufacturers of wheel bearing greases for the evaluation of their respective products, so a study was made of such test methods as a basis for the development of a performance test.

The following service characteristics were considered applicable to the problem:

1. Tendency of grease as such, or of separated oil, to leak from the wheel bearing in service.
2. Ability of the hot grease to hold its form in the hub.
3. Tendency of grease toward abnormal consistency changes in drastic service.
4. Tendency of grease to separate oil or soap in drastic service.
5. Tendency of grease to fail to lubricate bearings, i.e., to allow balls or rollers to run dry although adequate grease remains in the hub.

Drawings and pictures of the apparatus and a test procedure have been prepared and circulated to the entire group for preliminary test work. The future program calls for the testing of a group of grease samples and a comparison of these results with results obtained by the various cooperating laboratories using their individual test equipment.

CLG Project No. 26—"Slush-On Lubricants" (Navy Bureau of Ordnance)

A meeting was held at the Naval Gun Factory, Washington, D. C., to consider its grease problems. This project was developed at that meeting and covers testing in the individual laboratories, followed by performance tests on Navy gun mounts, etc. at the Gun Factory.

The tests have not been completed but the results to date have indicated some of the grease properties required for satisfactory lubrication of this equipment.

CLG Project No. 27—"Torpedo Tail Packing Compound"

CLG Project No. 28—"Fungi Resistant Greases"

This problem was presented to the Group by the Signal Corps Photographic Center, but the problem involves the operation of all types of equipment in use in the South Pacific Area.

Several samples of grease containing fungicides have been recommended and at the present time are being tested by the Signal Corps and the Ordnance Department.

The Signal Corps is investigating the effect of the fungicide on photographic film, and the Ordnance Department, with the assistance of the Department of Agriculture, is testing the effectiveness of the fungi resistant greases.

All of the completed reports have been submitted to Washington for release to the Grease Industry and it is the hope of the author that he may be able to give the list of those released to date at the time of this meeting.

As Chairman of the Advisory Group, I would like to say that it has been a pleasure to work with this Committee. Each member has been willing to tackle any of the problems and to do whatever test work was necessary to solve the problem.

The experience of the Group has indicated that continued cooperative work is necessary in order to fit the lubricant to the equipment. From the cooperative work of such groups, the tools for the research development of greases will be produced. The increase in speed and power output of equipment will no doubt require the use of performance tests to insure the quality of grease products. The development of such performance tests will be a post-war job as well as a war job.

A.S.T.M. Standards on Petroleum Products and Lubricants

October, 1944

This latest compilation of all A.S.T.M. specifications, methods of tests, and definitions pertaining to petroleum products includes the some 80 standards which with certain supplementary material comprises more than 500 pages.

In addition to the current report of the Society's Committee D-2 responsible for most of the standards, there are certain proposed methods, for example, one on saponification number of petroleum by electrometric titration; proposed conversion tables for petroleum oils of metric tons to long tons and short tons. Also a discussion on oil measurement; proposed methods of analyzing petroleum sulfonates; and a test for potential gum in aviation gasoline.

The large number of test methods provide authoritative procedures for determining properties of a wide range of petroleum products, for example, acid heat of gasoline, aniline point, burning quality of various products, carbon residue, color, distillation, specific gravity, knock characteristics of fuels, melting point, etc.

Specifications are included covering fuel oils and gasolines, Stoddard solvent, various types of asphalt, etc.

This book, which includes the emergency method of test for color of Army motor fuel, and certain emergency provisions, can be obtained from A.S.T.M. Headquarters, 260 S. Broad St., Philadelphia 2, Pa., at $2.75 each, with reduced prices on orders in quantity.

Buy Bonds

Back the Boys!

CORRECT
LUBRICATION
since **1866**

SOCONY-VACUUM OIL COMPANY, INC.

26 BROADWAY NEW YORK, N. Y.

"Business is Ingreasing"

BATTENFELD GREASE & OIL CORP.

KANSAS CITY, MO.
MINNEAPOLIS, MINN.
N. TONAWANDA (Buffalo) N. Y.

•

Manufacturers of

BAT'S GREASES

exclusively for Refiners and the Jobbing Trade

APPENDIX A

Report on Activities - Grease Advisory Group

INDEX OF PROJECTS — GREASE ADVISORY GROUP

C.L.G. Project Number	*Subject*	*Comments*
1.	Chassis Lubrication and Maintenance Recommendations for Vehicles in Storage	C. W. Georgi, Leader Completed by Report of 12/26/42
2.	Rust Inhibiting Greases for Use in Stored Vehicles	C. W. Georgi, Leader Completed by Report of 12/26/42
3.	Extreme Pressure Greases for Worm Gears	J. C. Zimmer, Leader Progress Report issued 9/30/43 Final Report issued — Completed
4.	Low Temperature Torque Tests	Gus Kaufman, Leader 3 Progress Reports issued plus N.L.G.I.-A.B.E.C. Report. Further program in progress.
5.	Simplification of Greases Required by Air Forces for Plane Operation under Various Climatic Conditions	Project cancelled
6.	Lubrication Instructions — Wheel Bearings	C. W. Georgi, Leader Progress Report issued March 1943 Final Report issued August 1943 Completed
7.	Summary of Government Grease Specifications	C. W. Georgi, Leader Completed by Report issued August, 1943
8.	Summary and Analysis of Grease Test Data Obtained by Cold Weather Test Detachment, Aberdeen Proving Ground, Winter 1942-43	C. W. Georgi, Leader Completed by Report issued August, 1943
9.	Bomb Oxidation Test for Storage Stability of Lubricating Greases	J. C. Zimmer, Leader Progress Report issued March 1943
10.	Tests to Determine the Tendency of Lubricating Greases to Separate Oil at Elevated Temperatures Under Static Conditions	Gus Kaufman, Leader 1st Report issued March, 1943 2nd Report issued August 18, 1943 Final Report issued Jan. 26, 1944 Completed
11.	Lubrication Recommendations for Tank Suspension Systems When Using the Alemite #6697A Grease Gun	C. W. Georgi, Leader Completed by Report issued March 1943
12.	Grease Pumpability Tests in Power Driven Dispensing Equipment	C. L. Knopf & E. W. Adams, Leaders. Completed by Report 4/28/43
13.	Test Procedure for the Evaluation of Water Resistance of Lubricating Greases	E. W. Aldrich, Leader 1st Report issued 9/28/43 Final Report in preparation
14.	Test Procedure for the Determination of Dirt in Precision Instrument Greases	E. W. Adams, Leader Final Report issued 2/2/44 Completed
15.	Fats and Fatty Acids for Lubricating Grease Manufacture	Gus Kaufman, Leader 1st Report issued 8/17/43 2nd Report issued 8/20/43 Completed

C.L.G. Project Number	*Subject*	*Comments*
16.	Performance Tests on High Temperature Greases for Aircraft Engine Accessories	R. C. Adams & J. C. Zimmer, Leaders. Test Program in progress
17.	Performance Tests on General Purpose Aircraft Greases	Gus Kaufman, Leader Report issued 9/23/43 Completed per discussion at Meeting of 11/30/43
18.	Investigation of Corrosion Tests on Greases	T. G. Roehner, Leader Report issued 2/28/44 Final report issued 4/11/44 Completed
19.	Test to Predict Oil Separation from Greases in Storage	Gus Kaufman, Leader Test Methods being studied
20.	Investigation of Apparent Viscosity of Greases (210°, 130°, 77°, 0°, −40°, −67°, −90°)	J. C. Zimmer, Leader Test program in progress with Pressure-Viscosimeters.
21.	Evaporation Test Procedure for Low Temperature Greases	E. W. Adams, Leader Test program and survey in progress
22.	Further Consolidation of Greases Required for Army Vehicles	C. W. Georgi, Leader Preliminary Report issued 12/10/43 Final Report issued 2/2/44 Completed
23.	Recommendations on Specifications for Paraffin Waxes for U. S. Army	E. W. Aldrich, Leader Information developed by survey supplied to Major Faust for preparation of proposed specification. Completed.
24.	Test Method for Determination of Inorganic Insoluble Matter in Greases	Gus Kaufman, Leader Preliminary Report issued 2/25/44 Second report in progress
25.	Recommendations Relative to Performance Tests on Wheel Bearing Lubricants	E. W. Adams, Leader Test apparatus being designed for study by Group.
26.	Slush-On Lubricants (Navy Spec. O.S. 1385)	Gus Kaufman, Leader Test program in progress at Naval Gun Factory
28.	Fungi Resistant Lubricants	T. G. Roehner, Leader Progress reports issued
29.	Determination of Consistency of Rust Preventive Compounds	C. W. Georgi, Leader Progress reports issued
30.	Outboard Motor Gear Greases	Gus Kaufman, Leader Progress reports issued
31.	Lubrication of Silicone Insulated Motor Bearings	Gus Kaufman, Leader Progress reports issued
32.	Equilibrator Greases	E. W. Adams, Leader
33.	Test Method for Evaluating EP Characteristics of Aircraft Lubricants	T. G. Roehner, Leader
34.	Storage Stability of Aircraft Greases	J. C. Zimmer, Leader
35.	Procedure for Taking Grease Samples	C. W. Georgi, Leader

FISKE BROTHERS REFINING CO.

Established 1870

★

NEWARK, N. J.

TOLEDO, OHIO

★

Manufacturers of

LUBRICATING GREASES

Base for Soluble Cutting Oils

SONNEBORN'S

PETROMIX #9

(With Patented Non-Foaming Feature)

Blend Petromix #9 with mineral oil and you have a soluble cutting oil of sparkling clarity, producing highly stable emulsions with water. Petromix #9 possesses definite properties for inhibiting rust and corrosion. Highly concentrated—contains no evaporating solvents. Free-flowing—non-separating—will not decompose or deteriorate in storage. Easy to handle and blend. Economical to use.

Petromix #9 also is used in the manufacture of emulsified solvents for cleaning industrial floors, trucks, buses, ordnance material, etc. Special Petromixes available to meet individual requirements.

Write for Bulletin G-7

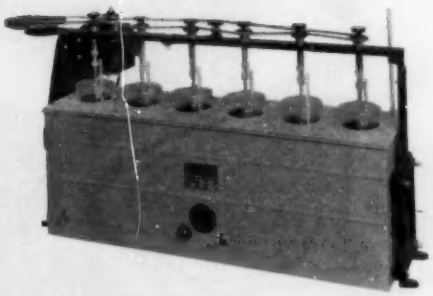
WHITE OIL DIVISION

L. SONNEBORN SONS, INC.

88 Lexington Avenue, New York 16, N.Y.

Automotive lubricants
Greases and Cutting fluids
•
PENOLA INC.
26 BROADWAY, NEW YORK 4, N.Y.

TESTING ★ TOPICS



Rust-Preventing Characteristics of Steam-Turbine Oil in the Presence of Water

A.S.T.M. TENTATIVE METHOD D-665-44T

THIS method of test is intended to indicate the ability of steam-turbine oils, including those used for steam-turbine gears, to aid in preventing the rusting of ferrous parts should water become admixed with the oil.

The bath holds six beakers and is equipped with an adjustable hydraulic thermostat. Operating temperature 140°F. Supplied complete with beakers, test rods and plastic covers.

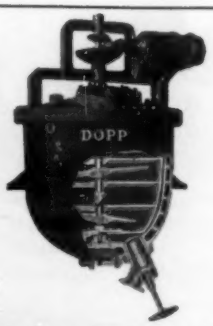
The six stirrers are driven by a constant speed motor, driving the stirrers at a speed of 1000 R.P.M. plus or minus 50 R.P.M.

Write for further details.

Send for your copy of 96-page Catalog 700, invaluable to compounders of greases and other lubricants.

PRECISION SCIENTIFIC COMPANY
★ *Engineers and builders of scientific apparatus and production control laboratory equipment*
1750 N. SPRINGFIELD AVENUE, CHICAGO 47, ILL.

SWAN-FINCH OIL CORP.
RCA Building, New York 20, N. Y. — 201 N. Wells St., Chicago 6, Ill.
Manufacturers
Lubricating Oils — Greases
Foundry Core Oils



DOPP
positively-scraped
GREASE KETTLES
and
PRESSURE MIXERS
BUFFALO FOUNDRY & MACHINE COMPANY
1625 Fillmore Ave. — Buffalo 11, N. Y.

ALEMITE

WORLD'S LARGEST PRODUCERS OF LUBRICATION FITTINGS AND EQUIPMENT

—

STEWART-WARNER CORP.
1826 Diversey Parkway
Chicago

STEEL SHIPPING CONTAINERS
STEEL PAILS AND CANS
All Sizes—All Styles
We would appreciate your inquiries
Central Can Company, Inc.
2415 W. 19th STREET
CHICAGO, ILL.

THE Votator * GREASE PROCESSING EQUIPMENT
T.M. REG. U. S. PAT. OFF
THE GIRDLER CORPORATION, Votator Div., Louisville, Ky.

"Good Oil is essential to good grease"
DEEP ROCK
"G" Cylinder Stock
Dewaxed Bright Stocks
and Neutral Oils
DEEP ROCK OIL CORPORATION
155 N. Clark St. Chicago, Ill.

TRABON
CENTRALIZED LUBRICATION
★ Manually or automatically operated . . . for machines and machinery of all kinds ★ ★ ★
TRABON ENGINEERING CORP.
1814 E. 40th ST. • CLEVELAND, OHIO

Complete Packaging Service for LITHOGRAPHED METAL AND GLASS CONTAINERS
GREASE • KEROSENE
LUBRICATING OILS • STEEL PAILS
OWENS-ILLINOIS GLASS COMPANY
OWENS-ILLINOIS CAN COMPANY
TOLEDO • OHIO

WOOL GREASES
(Degras)
Common — Neutral — Lanolin
For All Purposes
Refined by
N. I. MALMSTROM & CO.
BROOKLYN, N. Y.

Specialized Glycerides
and
FATTY ACIDS
for
Lubricating Greases
•
THE
WERNER G. SMITH CO.
(Division of Archer-Daniels-Midland Company)
2191 West 110th St., Cleveland, O.

Fats & Fatty Acids
For The
Grease Manufacturer
W. C. HARDESTY Co., Inc.
NEW YORK, N. Y.

Ship Safely in Barrels made by J&L
J&L STEEL BARREL COMPANY
SUBSIDIARY OF
Jones & Laughlin Steel Corporation
PLANTS
St. Louis, Mo. - No. Kansas City, Mo. - Bayonne, N. J. - Philadelphia, Pa. - New Orleans, (Gretna) La. - Lake Charles, La. - Port Arthur, Texas

A Complete Line of Oils...
FOR THE GREASE MANUFACTURER
CALUMET REFINING CO.
4323 S. Western Blvd. Chicago, Ill.
Refinery, Burnham, Ill.

Use Metasap Aluminum Stearate Bases for Clear, Transparent Water Insoluble Greases.
•
METASAP CHEMICAL COMPANY
HARRISON, NEW JERSEY

Publishers of . . . .
A SYMBOL OF Chek-Chart SAFE LUBRICATION
CHEK-CHART Automotive Lubrication Guide, Truck Lubrication Charts, Tractor Lubrication Charts, Aircraft Lubrication Charts, Farm Implement Lubrication Charts, Wall Chart, Truck and Tractor Booklet, Service Bulletin, Tractor Digest, CHEXALL Accessory Manual, SERVICE MAN'S GUIDE to Automotive Lubrication, "I Listened and Learned" Training Manual.
THE CHEK-CHART CORP.
Headquarters for Automotive Service Information
624 S. Michigan Avenue, Chicago 5, Ill.

LUBRICATE FOR SAFETY EVERY 1000 MILES